B. Specification

Please amend the paragraph at page 1, lines 12-25, as follows:

--Biodegradable polymer materials are widely employed in medical materials, drug delivery systems, environment-matching materials and the like. New additional functions ~~are~~ have recently become required and various researches are being ~~made~~conducted. Particularly in a polyhydroxyalkanoate represented by polylactic acid, an introduction of a chemically modifiable functional group into the molecule is investigated, and compounds having a carboxyl group or a vinyl group are reported. For example, polymalic acid is ~~kknown~~ known as a polyhydroxyalkanoate having a carboxyl group in a side chain. A polymer of polymalic acid is known, by a manner of polymerization, in an α-type represented by a chemical formula (16):--

Please amend the paragraph at page 4, line 14, to page 15, line 1, as follows:

--Also there is reported a polymer having novel functions by introducing a structure providing a functionality into a polyhydroxyalkanoate in which a chemically modifiable functional group is introduced as described above. International Journal of Biological Macromolecules 25 (1999) 265 (non-patent literature 6) discloses a ring-opening polymerization of a cyclic dimer of α-malic acid and glycolic acid to obtain an α-malic acid-glycolic acid copolymer, and to unprotect the obtained polymer to obtain a polyester having a carboxyl group in a side chain. The carboxyl group of the side chain is chemically modified with a tripeptide to obtain a polymer, which is reported to provide a

satisfactory result in an evaluation of a cell ~~adhesivity~~adhesiveness.--

Please amend the paragraph at page 26, line 19, to page 27, line 10, as follows:

--The phosphoric acid-based condensing agent can be a phosphite-based condensing agent, a phosphoric chloride-based condensing agent, a phosphoric anhydride-based condensing agent, a phosphoric ester-based condensing agent, or a phosphoric amide-based condensing agent. In the reaction of the invention, a condensing agent such as a phosphite ester. The phosphite ester to be employed can be, for example, triphenyl phosphite, diphenyl phosphite, tri-o-tolyl phosphite, tri-o-tolyl phosphite, tri-m-tolyl phosphite, di-m-tolyl phosphite, tri-p-tolyl phosphite, di-p-tolyl phosphite, di-o-chlorophenyl phosphite, ~~tri-p-chloropyenyl-~~tri-p-chlorophenyl phosphite, di-p-chlorophenyl phosphite, trimethyl phosphite, or triethyl phosphite, among which triphenyl phosphite is employed preferably. Also for improving a solubility and a reactivity of polymer, a metal salt such as lithium chloride or calcium chloride may be added.--

Please amend the paragraph at page 29, line 14, to page 30, line 4, as follows:

--Another producing method of the present invention, in case a portion R in the chemical formula (1) is $-A_1-SO_3H$, executes, after a condensation reaction with amine, a methyl esterification with a methyl esterifying agent to change the portion R in the

chemical formula (1) into $-A_1-SO_3CH_3$. The methyl esterifying agent can be that employed in a methyl esterification of a fatty acid in a gas chromatography analysis. The methyl esterification can be executed by an acid catalyst method such as a hydrochloric ~~acide~~acid-methanol method, a boron trifluoride-methanol method or a sulfuric acid-methanol method, or a base catalyst method such as a sodium methoxide method, a tetramethyl guanidine method or a trimethylsilyl diazomethane method. Among these, the trimethylsilyl diazomethane method is preferred as the methylation can be achieved under a mild condition.--

Please amend the paragraphs at page 32, line 23, to page 33, line 21, as follows:

--A solvent in the reaction of the invention is not particularly restricted as long as it is inert to the reaction and is capable of dissolving the starting material to a certain extent, but can be an aliphatic hydrocarbon such as hexane, cyclohexane, heptane, ligroin or ~~petroleium~~ petroleum ether; an aromatic hydrocarbon such as benzene, toluene or xylene; an ether such as diethyl ether, diisopropyl ether, tetrahydrofuran, dioxane, dimethoxyethane or diethylene glycol dimethyl ether; or an amide such as formamide, N,N-dimethylformamide, N,N-dimethylacetamide, N-methyl-2-pyrrolidone, N-methylpyrrolidone or hexamethyl phosphorotriamide, preferably tetrahydrofuran.

The reaction is executed in the presence of a base. The base to be employed can be an alkyl lithium such as methyl lithium or butyl lithium; an alkali metal disilazide

such as lithium hexamethyl disilazide, sodium hexamethyl disilazide, or potassium hexamethyl disilazide; or a lithium amide such as lithium diisopropylamide or lithium ~~dicyclohexaylamide~~dicyclohexylamide, preferably lithium diisopropylamide. In the invention, the base is employed in an amount of 0.001 - 100 times in moles, preferably 0.01 - 10 times in moles, with respect to the unit represented by the chemical formula (11).--

Please amend the paragraph at page 36, line 6, to page 37, line 12, as follows:

--Preparation of a carboxylic acid by hydrogenolysis comprising catalytic reduction is executed in the following manner. A catalytic reduction is executed by reacting hydrogen under a normal or elevated pressure in a suitable solvent and in the presence of a reduction catalyst, at a temperature within a range of -20°C to the boiling point of the employed solvent, preferably 0 to 50°C. The solvent to be employed can be, for example, water, methanol, ethanol, propanol, hexafluoroisopropanol, ethyl acetate, diethyl ether, tetrahydrofuran, dioxane, benzene, toluene, dimethylformamide, ~~poyridine~~pyridine, or N-methylpyrrolidone. Also, a mixture of these may ~~also~~ be employed. The reduction catalyst to be employed can be a single catalyst or a catalyst carried on a carrier, such as of palladium, platinum, or rhodium, or Raney nickel. A reaction time is usually 0.5 to 72 hours. A reaction liquid containing thus generated polyhydroxyalkanoate having a unit represented by the chemical formula (8) is subjected to

a filtration for eliminating the catalyst and a solvent elimination for example by a distillation to recover a crude polymer. The obtained polyhydroxyalkanoate having a unit represented by the chemical formula (8) can be, if necessary, isolated and purified. Such isolation and purification are not particularly restricted, and may be executed for example by a re-precipitation with a solvent in which the polyhydroxyalkanoate having a unit represented by the chemical formula (8) is insoluble, a column chromatography, or a dialysis. However even a catalytic reduction may also cause a cleavage of the ester bond of the main chain, resulting in a decrease in the molecular weight.--

Please amend the paragraph at page 37, lines 15-22, as follows:

--Also in the polyhydroxyalkanoate having a unit represented by the chemical formula (5) of the invention, a polyhydroxyalkanoate having a unit represented by a chemical formula (23) can be produced by an esterification, employing a polyhydroxyalkanoate having a unit represented by a chemical formula (24) as a starting material and employing an ~~estifying~~ esterifying agent.--

Please amend the paragraph at page 40, line 15, to page 42, line 27, as follows:

--Examples of the compound represented by the chemical formula (12) include methyl chloroformate, ethyl chloroformate, propyl chloroformate, isopropyl chloroformate, butyl chloroformate, cyclohexyl chloroformate, benzyl chloroformate,

methyl bromoformate, ethyl bromoformate, propyl bromoformate, isopropyl bromoformate, butyl bromoformate, cyclohexyl bromoformate, benzyl bromoformate, methyl chloroacetate, ethyl chloroacetate, propyl chloroacetate, isopropyl chloroacetate, butyl chloroacetate, cyclohexyl chloroacetate, benzyl chloroacetate, methyl bromoacetate, ethyl bromoacetate, ~~propoyl~~ propyl bromoacetate, isopropyl bromoacetate, butyl bromoacetate, cyclohexyl bromoacetate, benzyl bromoacetate, methyl 3-chloropropionate, ethyl 3-chloropropionate, propyl 3-chloropropionate, isopropyl 3-chloropropionate, butyl 3-chloropropionate, cyclohexyl 3-chloropropionate, benzyl 3-chloropropionate, methyl 3-bromopropionate, ethyl 3-bromopropionate, propyl 3-bromopropionate, isopropyl 3-bromopropionate, butyl 3-bromopropionate, cyclohexyl 3-bromopropionate, benzyl 3-bromopropionate, methyl 4-chlorobutyrate, ethyl 4-chlorobutyrate, propyl 4-chlorobutyrate, isopropyl 4-chlorobutyrate, butyl 4-chlorobutyrate, cyclohexyl 4-chlorobutyrate, benzyl 4-chlorobutyrate, methyl 4-bromobutyrate, ethyl 4-bromobutyrate, propyl 4-bromobutyrate, isopropyl 4-bromobutyrate, butyl 4-bromobutyrate, cyclohexyl 4-bromobutyrate, benzyl 4-bromobutyrate, methyl 5-chlorovalerate, ethyl 5-chlorovalerate, propyl 5-chlorovalerate, isopropyl 5-chlorovalerate, butyl 5-chlorovalerate, cyclohexyl 5-chlorovalerate, benzyl 5-chlorovalerate, methyl 5-bromovalerate, ethyl 5-bromovalerate, propyl 5-bromovalerate, isopropyl 5-bromovalerate, butyl 5-bromovalerate, cyclohexyl 5-bromovalerate, benzyl 5-bromovalerate, methyl 6-chlorohexanoate, ethyl 6-chlorohexanoate, propyl 6-chlorohexanoate, isopropyl 6-chlorohexanoate, butyl 6-chlorohexanoate, cyclohexyl 6-chlorohexanoate, benzyl 6-chlorohexanoate, methyl 6-bromohexanoate, ethyl 6-

bromohexanoate, propyl 6-bromohexanoate, isopropyl 6-bromohexanoate, butyl 6-bromohexanoate, cyclohexyl 6-bromohexanoate, benzyl 6-bromohexanoate, methyl 7-chloroheptanoate, ethyl 7-chloroheptanoate, propyl 7-chloroheptanoate, isopropyl 7-chloroheptanoate, butyl 7-chloroheptanoate, cyclohexyl 7-chloroheptanoate, benzyl 7-chloroheptanoate, methyl 7-bromoheptanoate, ethyl 7-bromoheptanoate, propyl 7-bromoheptanoate, isopropyl 7-bromoheptanoate, butyl 7-bromoheptanoate, cyclohexyl 7-bromoheptanoate, benzyl 7-bromoheptanoate, methyl 8-chlorooctanoate, ethyl 8-chlorooctanoate, propyl 8-chlorooctanoate, isopropyl 8-chlorooctanoate, butyl 8-chlorooctanoate, cyclohexyl 8-chlorooctanoate, benzyl 8-chlorooctanoate, methyl 8-bromooctanoate, ethyl 8-bromooctanoate, propyl 8-bromooctanoate, isopropyl 8-bromooctanoate, butyl 8-bromooctanoate, cyclohexyl 8-bromooctanoate, benzyl 8-bromooctanoate, methyl 9-chlorononanoate, ethyl 9-chlorononanoate, propyl 9-chlorononanoate, isopropyl 9-chlorononanoate, butyl 9-chlorononanoate, cyclohexyl 9-chlorononanoate, benzyl 9-chlorononanoate, methyl 9-bromononanoate, ethyl 9-bromononanoate, propyl 9-bromononanoate, isopropyl 9-bromononanoate, butyl 9-bromononanoate, cyclohexyl 9-bromononanoate, and benzyl 9-bromononanoate.--

Please amend the paragraph at page 44, lines 12-23, as follows:

--The reaction is executed in the presence of a base. The base to be employed can be an alkyl lithium such as methyl lithium or butyl lithium; an alkali metal disilazide such as lithium hexamethyl disilazide, sodium hexamethyl disilazide, or

potassium hexamethyl disilazide; or a lithium amide such as lithium diisopropylamide or lithium ~~dicyclohexaylamide~~dicyclohexylamide, preferably lithium diisopropylamide. In the invention, the base is employed in an amount of 0.001 - 100 times in moles, preferably 0.01 - 10 times in moles, with respect to the unit represented by the chemical formula (11).--

Please amend the paragraph at page 45, lines 2-11, as follows:

--The polyhydroxyalkanoate constituted of a unit of substituted α-hydroxy acid represented by the chemical formula (11) to be employed in the invention can be synthesized by a known method. For example, a polyester can be produced directly from an α-hydroxy acid. Otherwise, it can be produced, prior to polymerization~~a polymerization~~, by ~~convertin~~ converting an α-hydroxy acid into a derivative of a high polymerization activity and then executing a ring-opening polymerization.--